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“..... per litora spargite muscum,
Naiades, et circum vitreos considite fontes :
Pollice virgineo teneros hic carpite flores :
Floribus et pictum, divæ, replete canistrum.
At vos, o Nymphæ Craterides, ite sub undas ;
Ite, recurvato variata corallia trunco
Vellite muscosis e rupibus, et mihi conchas
Ferte, Deæ pelagi, et pingui conchylia succo.”
N. Parthenii Giannettasii Ecl. 1.

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I.—*Monograph of the genus Catops.*
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NOTWITHSTANDING Mr. Spence's able Monograph of the British species of this genus, and the excellent works of Erichson, Sturm, Redtenbacher, Kraatz and others, its study is still attended with so much difficulty, that I imagine the following attempt to clear up the synonymy, and to make the species more easily recognizable, will be welcome, particularly to British entomologists.

When I commenced my examination of the genus, with a view to publishing the results, I applied to my entomological friends for their assistance both in the way of information and communication of specimens, an application which was cordially responded to. I have thus had the advantage of carefully examining Mr. Waterhouse's collection, which I believe to be the best representative of the Spencian species extant ;—the determination having been submitted to and approved by Mr. Spence himself, with this qualification, that he (Mr. Spence) had described some of his species from specimens belonging to others, to whom they had been returned, so that the type specimens

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were scattered, and the certainty of accuracy derivable from the actual comparison of specimens with the types was in these instances no longer attainable. It is on the faith of Mr. Waterhouse's collection therefore that I principally depend for the identity of the names with the species described by Spence, where the descriptions themselves have failed me.

From Mr. Stephens's collection now in the British Museum I have in like manner endeavoured to identify the species described by him, and as his specimens of Spence's species in a majority of instances correspond with Mr. Waterhouse's, they so far confirm the authority of that gentleman. I have further had the advantage of examining the species in the Jardin des Plantes;—those of M. Lucas and of M. Chevrolat (who left the whole of his large collection of *Catops* for months in my hands), and those of M. Fairmaire, M. Javet, and other French entomologists. To M. Kraatz of Berlin, whose elaborate and admirable revision of the European species of the genus shows the attention he has bestowed upon the subject, I owe especial thanks. Besides favouring me with his opinion upon my ideas, he has furnished me with a nearly complete series of his species, and entrusted those he could not spare to me for examination, so that I have in general the advantage, when speaking of any view entertained by him, of knowing with certainty the identity of the species under discussion. In relation to the North American species I beg particularly to record my obligations to Dr. Leconte of Philadelphia, Dr. Asa Fitch of Salem, and Mr. Calverly of New York. To our British entomologists, Dr. Power, Mr. J. T. Syme, Mr. Hislop, Rev. W. Little, Rev. Hamlet Clark, Mr. Guyon, Mr. Bates, Dr. Lowe and others, I also owe many thanks. They have entrusted to me the whole of their species for as long a period as I chose to retain them, and the whole of the gentlemen I have named have liberally placed their duplicates at my disposal. I take this opportunity to tender to each of them individually my best thanks for their kindness.

With this acknowledgement of my obligations and explanation of the sources of my information, I shall now in the first place cast a rapid glance at what has been done by previous authors, first in the European species and afterwards in the exotic; I shall then give detailed descriptions of all the different species which have been described or have come under my notice (among which will be found one or two new species), and lastly conclude by giving a short dichotomous table of the characters of the European species of the genus.

The species which compose this genus were scattered by ancient authors among several other genera. DeGeer placed one species under *Dermestes*, and Geoffroy another under *Silpha*.

Fourcroy placed the only one he knew under *Peltis*, Panzer under *Helops*, Fröhlich under *Luperus*, Fabricius under *Cistela* and *Hydrophilus*, Marsham under *Mordella*, and Linnæus (possibly) under *Chrysomela*. Latreille was the first who in his 'Précis des Caractères Génériques des Insectes,' established the genus under the name of *Choleva*. This was in 1802, and about two years after it was also recognized first by Paykull, and afterwards by Knoch, who each gave it another name—Knoch that of *Ptomaphagus* which was adopted by Illiger, and Paykull that of *Catops* which was adopted by Fabricius, and has been retained by most subsequent authors. By the rule of priority therefore the name should be *Choleva*, but I am glad that I have a sufficient apology for not disturbing the almost universally adopted name of *Catops*. Latreille himself appears at first only to have applied his name to one section of the genus. This appears from his 'Histoire Naturelle des Crustacés et des Insectes,' where in speaking of his constituting the genus, he says, "Its appearance, says Geoffroy, resembles that of the *Mordellæ*, that is to say, it has long legs with which it walks as if it limped. It is from that character that I have taken my generic denomination: *Choleva* in Greek means 'lame.'" The long legs here referred to apply to the first section of the genus, which was subsequently erected into a separate genus by Stephens, and may, I think, be properly maintained as a subgenus, to which Latreille's name may be restricted.

The number of species at first described was small. Latreille in his 'Hist. Nat.' only describes three, and in his 'Genera Crustaceorum et Insectorum,' published in 1807, he describes five. He there breaks the genus into two groups, one corresponding to the subgenus *Choleva*, of which he describes the species *agilis* and *angustatus*, auct., and the other including the rest of the genus.

Gyllenhal in 1808 published six species in the first volume of his 'Insecta Succica.'

It is unnecessary to enter into any examination of the synonymy of the species described by these authors. Their descriptions are for the most part too vague and applicable to too many species subsequently described to allow us to rely greatly upon them. Gyllenhal in his 4th volume, which was not published till 1827, acknowledges that in his 1st volume he had included five different species under one name.

Mr. Spence was the first author who brought the genus into something like order.

In his Monograph (published in the Linnæan Society's Transactions in 1815) he divided the genus into three main

sections, dependent upon the antennæ being filiform or clavate, the posterior angles of the thorax obtuse or acute, and the elytra striate or not striate; the dilatation or non-dilatation of the first article of the middle tarsi in the males was also made a subordinate character. Of these, the first and last are the only ones which have been adopted as sectional characters by subsequent authors; but the form of the hinder angles of the thorax, although not a good sectional character by itself, will, I think, if taken in conjunction with the base of the elytra, be found to furnish good characters for natural subdivision. Mr. Spence groups his species under the above sectional characters (to each of which I shall attach the synonym now most in use) as follows, viz. :—

* *Antennæ subfiliform; posterior angles of thorax obtuse.* (= Subgen. *Choleva*, Steph.).

C. oblonga = *angustata*, Fab., Erich.

C. agilis = *agilis*, Ill., Erich.

** *Antennæ clavate; posterior angles of thorax acute; elytra for the most part striated* (= Subgen. *Catops*, Steph.).
(*Anterior thighs for the most part thickened at the apex in the males, and first article of middle tarsi dilated.*)

a. *Basal margin of thorax excised near the angles.*

C. nigricans = *nigricans*, Erich.

C. sericea = *fuscus*, Panz., Erich.*

* Erichson, and after him Kraatz, give *C. picipes*, Fab., as the synonym of Spence's *sericea*, but I think this is a mistake. The description better accords with *fuscus*, and I believe that *picipes* has not yet been found in Britain. I recorded it in my 'Catalogue of Scottish Coleoptera' as found by myself in Scotland, but I am now satisfied that the specimen on which I relied was only a large variety of *nigricans*. If Erichson formed his opinion of the synonymy from not finding any other probable representative of *picipes* among Spence's species, the circumstance of its not being British explains how this may be. If he judged from Spence's description, he may have been misled by the commencing words used by Spence, "Body broader and more convex than in its congeners," which he might apply to *picipes*, which is the largest species in the genus; and by Spence's next words, "shorter than the preceding," viz. *nigricans*, he might have supposed him to mean less elongate in form, which *picipes* is, although certainly not actually shorter—it being longer. The only other resemblance to *picipes* is the black elytra; but Paykull's description of his *C. sericeus*, to which Spence refers as in all other respects identical with his, corrects this incongruity, for Paykull states the elytra of his species to be obscure testaceous. In Stephens's collection *sericea* is represented by a pale variety of *chrysomeloides*.

- C. tristis** = ——— ?
C. festinans† = ——— ? (possibly *grandicollis*, Erich.).
 b. *Thorax with the basal margin straight near the angles.*
C. chrysomeloides = *chrysomeloides*, Panz., Lat., Sturm.
C. Leachii‡ = *tristis*, Erich.
C. Kirbii§ = *rotundicollis*, Kellner.
C. Marshali|| = ——— ? (either *morio*, Erich. or *nigrita*, Erich.)
C. dissimulator¶ = ——— ? (probably *morio*, Erich.)

*** *Antennæ clavate; posterior angles of thorax acute; elytra not striated.*

(*Anterior thighs alike in both sexes, the middle tarsi with the first joint rarely dilated.*)

C. villosa = *sericeus*, Fab. (*villosa*, Lat.) (*Ptomaphagus truncatus*, Steph.)

C. velox = *velox*, Erich.

*C. fumata*** = ——— ? (probably *scitulus*, Erich.)

C. Watsoni = *fumatus*, Erich.

C. anisotomoides = *anisotomoides*, Sturm.

C. Wilkinii = *præcox*, Erich.

C. brunneus = *Colon (Mylæchus) brunneus*, auct.

* No species has puzzled British entomologists more to identify than this. The prominence given by Spence and Stephens to the clavate form of the antennæ, and Spence describing it as bearing a close general resemblance to *chrysomeloides*, has had the effect of making most of them attempt to find a representative for it out of narrow-clubbed and small varieties of *chrysomeloides*—and accordingly it is generally so represented in British collections—an error which I have seen continental entomologists fall into in like manner. I cannot ascertain to my own satisfaction what the species was which Spence had in view in describing this. Mr. Waterhouse had adopted the usual British view, but Stephens has his *tristis* wholly represented by *fuscus*, Erichs.

† This species is stated by Erichson and Kraatz to be a synonym of *fuscus*, but from what I have already said in the note upon *sericea*, it appears to me that that synonym is preoccupied. Mr. Waterhouse has not this name represented in his collection. In Stephens's it is represented by two specimens of *tristis* and one of *grandicollis*. Little can be made out from Spence's description.

‡ Represented wholly by *tristis* in Mr. Waterhouse's collection, and in Stephens's collection by two specimens of *tristis* and two of *grandicollis*.

§ Represented by *rotundicollis* both in Waterhouse's and Stephens's collections.

|| Mr. Waterhouse has this represented by *morio*; in Stephens's collection it is represented wholly by *chrysomeloides*.

¶ Given as a synonym of *morio* by Erichson. Represented by *tristis* in Waterhouse's collection, and by three specimens of *grandicollis* and one of *nigrita* in Stephens's collection.

** This name (*fumata*) has been universally applied to the species commonly known as the *fumatus* of Erich. and other authors, but a comparison

The next author who went over the genus was Stephens. As he finally left it in his Manual, it contains all Spence's species, besides five of his own, and three which had been described by Mr. Newman in the 'Entomological Magazine,' between the commencement of the appearance of his 'Illustrations' and the publication of his 'Manual.'

The following is the result of my examination of the species standing named in his collection in the British Museum, viz. :—

- Pltomaphagus truncatus* = *C. sericeus*, Panz. (*truncatus*, Illig.)
- *velox* = *velox*, Spence.
- *fumatus* = *fumatus*, Erich.
- *Watsoni* = *fumatus*, Erich., and *scitulus*, Erich., mixed.
- *anisotomoides* = *anisotomoides*, Spence.
- *Wilkinii* = *præcox*, Erich.
- Catops nigricans* = *nigricans*, Spence.
- *sericea* = pale variety of *chrysomeloides*, Spence.
- *tristis* = *fusca*, Erich.
- *festinans*, represented by two specimens of *grandicollis*, Erich., and two of *tristis*, Erich.
- *affinis* = *nigrita*, Erich.
- *chrysomeloides* = *chrysomeloides*, Spence.
- *Leachii*, represented by two specimens of *grandicollis*, Erich., and two of *tristis*, Erich.
- *Kirbii* = *rotundicollis*, Kellner.

of Spence's description of it and his next species, *Watsoni*, shows that the latter is what is now known as *fumatus*, and that the former is most probably *scitulus*, Erich. In his description of *Watsoni* Spence says, "In colour this species does not much differ from the preceding, but is furnished with other characters strikingly distinctive. The antennæ are shorter and thicker" (which is the case in the true *fumatus*). He also gives the last joint as pale, while he says nothing of this distinctive character in describing the preceding species. The rest of the description also corresponds with the view I have taken. I am perhaps wrong in using the expression "*true fumatus*." The *true fumatus* should by the rule of priority be what Spence had under his eye when he described it, but I think we are getting out of all bounds in our stickling for priority. If an author describes a species so loosely that it cannot be recognized from his description, so that subsequent authors misapply or ignore his name, while on their part they give a recognizable description, I cannot see on what principle of justice or propriety we are to be called upon to hold by the unrecognizable name instead of the recognizable, nor why an author (be he living or dead, or great or small) should be allowed to supplement his inadequate description by a reference to the typical specimens in his cabinet from which the descriptions were taken,—a practice now in vogue, against which I take this opportunity to enter my protest. Notwithstanding the claims of priority therefore, I do not propose to invert or disturb the generally adopted names of *fumatus* and *scitulus*. I have pointed out how the case obviously stands, and I leave to the advocates of priority the responsibility of introducing the confusion to which I demur.

Ptomaphagus Spencei = *rotundicollis*, Kellner.

— *fulvicollis* = *velox*, Spence.

— *Marshami* = *chrysomeloides*, Spence.

— *dissimulator*, represented by three specimens of *grandicollis* and one of *nigrita*.

Choleva angustata = *angustata*, auct.

— *gomphoita* = ditto.

— *agilis*, represented by three specimens of *agilis* and two of *angustata*.

The other species, or names of species, given in his Manual are not represented in his collection.

I have not had an opportunity of seeing typical specimens of Mr. Newman's three species, *frater*, *soror*, and *nubifer*; but my friend the Rev. Wm. Little has in his collection specimens which had been named by Stephens as being the two latter, and if we may take that as an indication, we find that *soror* = *nigricans* and *nubifer* = *velox*.

Erichson's 'Käfer der Mark Brandenburg' followed in 1837. His division differs from that of Spence. It is as follows, viz. :—

Characters of the first division :—

"*Mesosternum simple* (without keel); *body oblong*; *antennæ and legs long and thin, the former scarcely thickened at the point*; *legs slender*; *tarsi of fore-feet dilated in the males, tarsi of middle feet simple in both sexes.*"

This division corresponds to Spence's first section (Stephens's *Choleva*); and Erichson only records two species found in Mark Brandenburg as belonging to it, viz. *angustatus* and *agilis*.

The characters of his second division are—

"*Mesosternum simple*; *tarsi slender, and anterior tarsi and first joint of middle tarsi dilated in the males.*"

These characters place the following species in this section, viz. *C. fuscus*, *umbrinus*, *picipes*, *nigricans*, *grandicollis*, *tristis*, *nigrita*, *fuliginosus*, *morio*, *fumatus*, and *scitulus*, of which *grandicollis*, *fuliginosus*, and *scitulus* are given as new. *Fuliginosus* is said by Kraatz to be a variety of *nigricans* (though, from the description alone, I should not have supposed this), and *scitulus*, as already mentioned, had been described by Spence under the name of *fumatus*. Erichson does not record *chrysomeloides* as found in Mark Brandenburg, but from the differences which he points out between it and *tristis*, I am not sure but some confusion exists even in Erichson relating to *tristis*.

His next division is characterized thus :—

"*Mesosternum simple*; *body oval*; *antennæ somewhat thickened at*

the point; tarsi slender; anterior tarsi widened in the males; middle tarsi simple in both sexes."

Velox and *præcox* (Spence's *Wilkinii*) are Erichson's only species falling under this division.

The last division has the

"*Mesosternum keeled; tarsi strong; anterior tarsi in the males very broad, widened in the middle in the females; middle tarsi of both sexes equal.*"

The only species recorded by Erichson is *sericeus* (*truncatus*, Illig. and Steph.).

The above list is instructive both negatively and positively, both for what it does and for what it does not contain. Erichson was celebrated not only for his marvellous acumen in distinguishing species, but also for his success in collecting and for the extent of his collection. Mark Brandenburg too may be taken as fairly representing the rest of Northern Germany; and unless where the species are of a local character, we may pretty safely assume that the same species which occur in Mark Brandenburg will be found in the rest of Northern Germany. These premises should teach us to use great caution in admitting any new species from that district not described by Erichson, as they lead to the probable conclusion, first, that such new species might have been already found in Mark Brandenburg; secondly, that Erichson might have seen them; and lastly, might not have considered them distinct. Of course I do not make any further use of the great weight of his opinion, than to bespeak caution in determining upon such new German species as he has passed over.

Sturm next took up the group in his 'Deutschlands Fauna' in 1839. He added two new species to the first group (*Choleva*)—*spadiceus*, Dahl. *in litt.*, and *castaneus*, Andersch. *in litt.*—both of which have been adopted by subsequent authors, although, for reasons which I shall afterwards give, I think the latter is only a variety of *angustatus*. He also added the *badius* of Meg., the *brunneus* of Knoch, and the *anisotomoides* of Spence to the list of species found in Germany.

In 1841 Prof. Heer (in his 'Fauna Helvetica') described besides most of those already known, two new species, *montivagus* and *ambiguus*, and reproduced the *alpinus*, Gyll. The descriptions of the two former are too short and vague to allow of their being satisfactorily identified from the book, and I have not seen authentic specimens. M. Kraatz in his revision also states, that he has been unable to make them out, but holds that the *alpinus* of Gyllenhal has been rightly revived.

Several detached descriptions of individual species also appeared from time to time.

In 1832 a species from the Morea was described by Brullé in the 'Expédition Scientifique de Morée' under the name of *C. humeralis*, which seems to belong to the subgenus *Choleva*.

Chaudoir (Bulletin de Moscou, 1845, iii.) described two new species as being found in the neighbourhood of Vienna, *longipennis* and *sericatus*. M. Kraatz does not consider these to be distinct species, but joins them respectively to *nigricans* and *sericeus*.

Kellner in 'Stettin Ent. Zeit.' 1846, No. 6, described four new species, *C. longulus*, *rotundicollis*, *coracinus*, and *subfuscus*. As already mentioned, *rotundicollis* is the *Kirbii* of Stephens. Kraatz observes that *subfuscus* is not distinguishable from *alpinus*, Gyll.; and from a specimen of *longulus* submitted to me by M. Kraatz, I am satisfied that it is only a variety of *tristis*.

Rosenhauer (Beiträge zur Insectfauna Europas) in 1847 described *C. abdominalis* (considered by Kraatz to be a variety of *tristis*) and *C. varicornis*, which, although very close to *sericeus*, appears to be a good species.

Redtenbacher in his 'Fauna Austriaca' (1849) gives a synopsis of the species of the genus, but without adding any new species. Dr. Aubé in 1850 added *C. meridionalis* and *quadraticollis*, besides *Catopsimorphus orientalis*, to the list. All three appear to be good species.

The only works remaining to be noticed are M. Kraatz's revision of the genus published in parts in the 'Stettin Ent. Zeitung' in 1852, and the 'Faune Entomologique Française' now in course of publication by MM. Fairmaire and Laboulbène. Although the latter work is subsequent in date, I shall notice it first; partly because none of M. Kraatz's new species are to be found in it, and partly because M. Kraatz's revision contains a full summary of all the European species hitherto described, and is therefore well suited for closing this part of my paper.

The authors of the 'Faune Ent. Franç.' adopt the name *Choleva*, Lat., in deference to priority, instead of *Catops*. They do not introduce any new species. They adopt the four subdivisions laid down by Erichson, and in addition attempt to break up the second subdivision into smaller sections. These subdivisions are—

1. "Posterior angles of corselet obtuse," in which they place *C. picipes*, *grandicollis*, and *alpina*.
2. "Posterior angles of corselet right-angled, more or less pointed," containing *C. fusca*, *morio*, *nigrita*, *quadraticollis*, *tristis*, *chrysomeloides*, *rotundicollis*, and *fumata*.
3. "Posterior angles of corselet pointed, a little produced behind," which contains *unbrina*, *nigricans*, and *scitula*.

These divisions appear to me to group the species in too unnatural a manner to be of service even as an artificial mode of

arrangement in facilitating the determination of species. For instance, *picipes* in the first section has most affinity with *nigricans* in the third, *grandicollis* in the first with *tristis* in the second (indeed I propose to show presently that they are the same species); and *alpina* in the first has very close affinity with *fumata* in the second, and *scitula* in the third should join them. *Umbrina* undoubtedly ought to go beside *velox*, which is not in this section at all;—Erichson's character of the dilatation of the first joint of the middle tarsi in the males separating them. Their affinity otherwise however is so great, that I think that character must be disregarded to allow these species to take their proper place beside each other.

I now come to Kraatz's revision, in favour of which I cannot speak too highly. I differ from him in opinion in one or two instances, but wherever I do so I must beg the reader to take my opinion with caution and examine it with suspicion, as the well-known acumen and accuracy of that gentleman stamp his views with a *prima-facie* authenticity which only very strong evidence can overthrow.

He divides the genus into five sections, the first three and the last of which are Erichson's; the fourth is new.

In the first section he has *spadiceus*, a new species which he calls *intermedius*, *angustatus*, *castaneus* (or *cisteloides*, Fröhl.), and *agilis*. In speaking of Sturm I have already expressed my opinion that *castaneus* and *angustatus* were varieties of the same species, and I cannot come to a different opinion as regards *intermedius*. When I go over the species *seriatim*, I shall give my reasons for this—as well as for any similar views I may have adopted regarding other species.

In the second section he includes *acicularis* (a new species, which from the description seems distinct, but which I have not seen in nature), *umbrinus*, *fuscus*, *picipes*, *meridionalis*, *nigricans*, *coracinus*, *morio*, *nigrita*, *grandicollis*, *chrysomeloides*, *longulus*, Kelln. (which, as already mentioned, I think only a variety of *tristis*), *tristis*, *rotundicollis*, *neglectus* (a new species nearly allied to *tristis*), *alpinus*, *fumatus*, *brevicollis* (a new species which I have not seen, but which appears from the description to be good), and *scitulus*.

The third section is confined to *velox*, *badius*, *præcox*, *brunneus*, and *anisotomoides*.

The fourth section is characterized as follows, viz. :—

“*Mesosternum* feebly keeled; body oblong, smooth and shining; antennæ strong, scarcely thickened towards the point; difference of sexes unknown.”

This section is erected by Kraatz to receive a single species

named by him *lucidus*, and described from a single specimen found in Dalmatia.

The fifth section has received the greatest increase. Hitherto it had only contained the two species *sericeus* and *varicornis*, but Kraatz has added three new species, *strigosus*, *validus*, and *colonioides*. I have not seen *validus*, but the others appear to me good and distinct species.

Catopsimorphus orientalis he retains as forming a separate genus.

The number of exotic species which have been described is not great.

Three species from Algeria, *C. marginicollis*, *C. celer* and *C. rufipennis* have been described in 1849 by M. Lucas in the 'Exploration de l'Algérie.'

M. Motschoulsky described a species from Georgia, *C. pusillus*, in the Bulletins of the Imperial Society of Moscow for 1840.

Kolenati described in the 'Meletemata Ent.' a species, *C. fungicola*, from the Russian Province of Elisabethopoleos.

Menetries described a species (*C. pallidus*) from Bakon in the Caucasus in his 'Catalogue raisonné des Objets de Zoologie recueillis dans un voyage au Caucase,' &c. He also described in the Mem. Acad. Imp. Sciences de St. Pétersbourg, 6 sér. vi. 1849, two species, *C. lateritius* and *C. fuscipes*, found at Novaia Alexandrovskaja.

One species, *C. australis*, from Van Diemen's Land, has been described by Erichson in Wiegmann's 'Archiv für Naturgeschichte,' 1842.

The North American species hitherto described are *C. basilaris*, *C. opacus* and *C. simplex*, described by Say in the Journal of the Academy of Philadelphia, vols. iii. & v.; *C. Spenciana* described by Kirby in the 'Fauna Bor. Americ.'; *C. cadaverinus*, *C. Frankenhauseri*, *C. cryptophagoides*, *C. brunnipennis*, and *C. luridipennis* described by Mannerheim in the 'Bull. of the Imp. Soc. of Mosc.' in 1843, 1852 & 1853; *C. terminans* described by Leconte in Agassiz's 'Lake Superior,' and *C. clavicornis*, *C. californicus*, *C. strigosus*, *C. consobrinus*, *C. oblitus* and *C. parasitus*, described by the same author in the 'Proceedings of the Academy of Philadelphia,' 1853.

So much for the past history of the genus. We shall now proceed to the examination of the different species *seriatim*.

In doing so I shall first take the European species of each section, and then give the descriptions of the exotic species. I shall not attempt to intercalate the latter among the European species, because there are a number which I have not seen. I shall content myself with classing them according to their geographical distribution.

Genus CATOPS.

Mentum square, transverse, a little narrowed in front. Ligula of the breadth of the mentum at its base, widened and deeply emarginate in front. *The internal lobe of the maxilla terminated by a corneous nail or hook. The maxillary palpi* decidedly larger than the labial; *their third article formed like a reversed cone, the fourth much more slender, conic and acuminate.* The third article of the labial palpi oval, a little longer than the second. Mandibles short, furnished with a molar tooth at their base, arched, sharp at the end and unidentate before their summit. Labrum short, rounded, and a little sinuated in the middle in front. Head declining, obtuse in front. Eyes nearly rounded, moderate in size and not prominent. *Antennæ* at least of the length of the thorax; their first six articles of variable length, subcylindric, the last five forming a club, which is sometimes so elongated and slender as to be scarcely observable, and sometimes very distinct; *the eighth joint shorter than the seventh and ninth.* Prothorax of variable form. Elytra oblong or oval, arched above. Legs long and slender, the first four joints (and more especially the first two) of the anterior tarsi, and sometimes the first joint of the intermediate tarsi, dilated in the males and provided with brushes of hair below. Mesosternum sometimes keeled. Body oblong or oval, clothed with a very fine silky pubescence*.

The first division which I shall adopt is the same as Erichson's, and I preserve Latreille's name *Choleva* for it as a subgenus; but I shall drop the dilatation of the anterior tarsi and the first joint of the middle tarsi in the males as a character.

It is a detraction from any character that it requires an examination of both male and female to recognize it; and although the character is perfectly true in this group, it cannot be used in contrast to the subsequent divisions which I am going to propose, as in them exceptions to such a rule occur. I think the following short characters sufficient.

Group I. (Subgenus CHOLEVA.)

Mesosternum not keeled; body oblong; antennæ almost filiform; legs long and thin, posterior trochanters more or less developed in the males.

1. *C. angustatus*, Fab.

Cistela angustata, Fab. Syst. El. ii. 20. 23.

— *agilis*, Fab. Syst. El. ii. 20. 27.

* This description of the characters of the genus is copied with some modifications from that given by Prof. Lacordaire in his admirable work the 'Genera des Coléoptères.'

Catops elongatus, Payk. Faun. Suec. i. 345. 3; Gyll. Ins. i. 281. 6.

Ptomaphagus rufescens, Illig. Käf. Pr. 87. 1.

Catops rufescens, Duft. Faun. Aust. iii. 72. 1?

Choleva oblonga, Lat. Gen. Crust. et Ins. ii. 27. 1; Spence, Linn. Trans. xi. 138. 1.

Catops angustatus, Erich. Käf. d. Mark Brand. i. 233. 1; Sturm, Deutschl.

Faun. xiv. 5. 1. taf. 272. M. m; Heer, Faun. Helv. i. 378. 1; Redtenb.

Faun. Aust. 143. 4; Fairm. & Laboulb. Fn. Ent. Franç. i. 299.

Oblongus, fuscus vel nigro-piceus; *thorace postice non latiore*; elytris substriatis; antennis pedibusque ferrugineis.

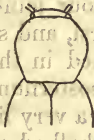
Long. $2\frac{1}{2}$ lin.

A long thin species. The head dark, the parts of the mouth and the antennæ ferruginous; the latter about the length of the elytra, the eighth joint a little smaller than the ninth, the last joint long and acuminate. The thorax is variable in form, sometimes widest at the middle, as in fig. 1, sometimes widest a little before the middle, as in fig. 2, and sometimes widest at the very front, as in fig. 3, but *never widest behind*; sometimes a little

Fig. 1.

Fig. 2.

Fig. 3.



broader than long, and sometimes about equal in length and breadth. The sides are rounded. In some examples they are semitransparent or paler than the centre (and are then known as the var. *angustatus*). In others the edges are firm and concolorous (the variety *castaneus*). The posterior angles are nearly right-angled, more or less obtuse. The upper side is very densely and finely punctate in the males, less so in the females, and in both covered with a thin pubescence. The elytra are feebly striated, finely and densely punctate, with a fine pubescence, sometimes rounded, sometimes acuminate at the apex, sometimes wholly ferruginous, sometimes dark chestnut, paler round the borders. The under side is brown, the edges of the abdominal segments and sometimes the apex of the abdomen reddish. The legs ferruginous.

The trochanters and thighs of the hind legs are liable to considerable variation in form in the males. The following varieties are met with.

1. The trochanters are simple, and the thighs have a fine tooth below.

2. The thighs are simple, and the trochanters are armed with a sharp spike.

3. The thighs are simple, and the trochanters lengthened, formed like a gouge-chisel, convex outwards, concave inwards, but with the edge turned inwards at the point.

4. Both thighs and trochanters simple.

It will be seen from the above that I consider this a variable species, and that the variations I have above indicated are nothing more than different forms of the same species. Erichson was of the same opinion, for it was he who first observed and recorded the variations in the form of the trochanters of the hind legs, and in noticing them he remarks—"Of the males I have the following variations before me. These, one cannot with propriety refer to different species, when in all other respects the perfect examples agree." Other authors however have come to a different opinion, and have made distinct species of these different varieties, and as these authors are of high standing and their species have been very generally adopted, it will be right, I think, to give a copy of their descriptions, so that the reader may have before him the means of judging for himself.

I shall therefore quote the descriptions of them given by Kraatz, as being both the most recent and the most ample; but, in accordance with my own opinion, I shall rank them here only as varieties.

Var. *C. angustatus*, Kraatz.

Catops angustatus, Kraatz, Stett. Ent. Zeit. xiii. 401.

"Oblongus, piceus; *thorace minus dense et subtiliter punctato*, ante medium latiore, angulis posticis obtusiusculis, marginibus et angulis posticis dilutioribus; elytris substriatis, rufo-ferrugineis, versus suturam postice interdum infuscatis.

"Long. $2\frac{1}{2}$ lin.

"*Mas*, trochanteribus posticis plerumque scalpiformibus.

"*Fœm.*? elytris apice acuminatis.

"The longest and narrowest species in this group. The antennæ are very slender, longer than the half of the body, *always entirely of a clear ferruginous colour*. First joint somewhat stronger and as long as the second; third nearly twice as long as the joints on each side of it (second and fourth); eighth only a little shorter than the seventh and ninth, which are equal in length; the last joint longer than the preceding, long, cylindrical, and acuminate. The head is blackish brown; the parts of the mouth ferruginous, abundantly and finely punctate. The thorax is a little broader than long, gently rounded at the sides, broadest before the middle, gradually narrowed towards the base, the posterior angles more or less feebly obtuse-angled; the basal margins are depressed for a moderate breadth, and somewhat bent

up, so that there is the commencement of a deepened line on each side. The upper side is covered with a moderately dense golden-yellow pubescence, and *tolerably abundantly and finely punctured, pitchy black, the outer edges and the posterior angles reddish brown,* with a more or less distinctly marked dorsal line, slightly impressed on both sides near the base. The elytra are only very feebly expanded, sometimes not wider than the base, pressed flat at the suture, slightly striated, finely and densely punctate, with a fine silken pubescence, ferruginous. The darker individuals are somewhat darker towards the apex near the suture. The legs are ferruginous red.

“*Note I.*—A not unimportant sexual distinction in this and the kindred species is afforded by the formation of the posterior trochanters. I have already (Stett. Ent. Zeit. xii. p. 284 ff.) expressed my opinion upon them, but by persevering investigations I am now able to add something to what has been already said, by way of completion. Male examples both of *C. angustatus*, Fab., and *C. cisteloides*, Fröhl. (*castaneus*, Sturm), occur with slightly developed simple acuminate posterior trochanters, with the difference however, that the trochanters in *C. angustatus* are narrower and longer than in *C. cisteloides*, and their point is far more acuminate. But there are moreover in both species males with very different, strongly developed trochanters. Nevertheless the principle of development is wholly different in the two species. The highest step of the development of the trochanters in the *C. cisteloides*, is that they are armed at the inner side with a projecting tooth more or less curved, and in the *angustatus*, that they are widened and lengthened into a gouge-chisel form; thus it is clear that a male of the *angustatus* can never come before us with a tooth at the inner side of the trochanter, it being impossible to form a transition-step to the gouge-chisel form.

“*Note II.*—I think I have found a second interesting sexual distinction of the females of the *C. angustatus*, F., in the single sharp acuminate posterior angles of the elytra. The specimens of Erichson (to be found in the Royal collection of this place (Berlin)) are represented as females of *C. angustatus*; in the same way a collection of females here agree perfectly with the males, but the latter have rounded elytra. One female taken at Cassels (alas, somewhat injured), which has been kindly surrendered to me by Herr Richl, has likewise acuminate elytra. A larger series of this generally rare species would be required to allow us to decide without doubt whether perhaps one of the species very similar to *C. angustatus* exists, of which the male likewise may have acuminate elytra. However, I consider this highly improbable.

"Note III.—From the near affinity of this species with the following species more minutely described by Sturm (*castaneus*, St.), is it surprising that I yet refer to this species the greatest part of those placed by Erichson under the *C. angustatus*, of the authors referred to by him, without subjecting to a more particular examination the descriptions given by them, and knowing whether or not they had the work of Sturm on *Catops* before them while engaged on their descriptions? Such an examination has been made as far as possible, and leads to the result that those authors who entered upon a more detailed description, such as Gyllenhal, Latreille, Spence, had mostly both species before them, as Gyllenhal without doubt appears to have had."

Var. *C. intermedius*, Kraatz.

C. intermedius, Kraatz, Stett. Ent. Zeit. xiii. 401.

"Oblongus, fuscus; thorace postice angustiore, ante medium latiore, angulis posticis obtusiusculis; elytris substriatis concoloribus; antennis pedibusque ferrugineis.

"Long. $2\frac{1}{2}$ lin.

"*Mas*, trochanteribus posticis scalpiformibus.

"In form this species occupies the middle place between *C. spadiceus*, Dahl., and *angustatus*, Fab.,—shorter and broader than the latter, less robust than the former; well distinguished however by its breadth. It is distinguished at the first glance from *C. spadiceus*, Dahl., by the thorax not being deeply and strongly punctured, as well as by its lighter colour. From *C. angustatus* it differs in the following points:—

"*a.* The whole beetle is shorter, more compressed, less equally broad than the *C. angustatus*, Fab.; the elytra in the middle somewhat bellied out.

"*b.* The antennæ are likewise uniform in colour, clear ferruginous red, but somewhat shorter and stronger, the eighth joint relatively shorter than in *C. angustatus*.

"*c.* The margin of the thorax is somewhat broader, and more bent upwards than in the *C. angustatus*, Fab.; it is also to be distinguished by the deepened lines on each side of the thorax. *The upper side is moderately finely and densely (coarsely-shagreen) punctured, ferruginous brown, occasionally somewhat darker in the middle.*

"*d.* The elytra are less equally broad than in the *C. angustatus*, Fab., in the middle somewhat bellied out, entirely of one colour, ferruginous brown.

"I have at least half-a-dozen females, but only one male before me, which with greater probability belongs to this species.

It has gouge-chisel-shaped lengthened trochanters in the hinder legs.

"This species has up to this time been collected in the island of Rugen (Erichson!), Königsberg (Hargen!), Leipzig (v. Kiesenwetter!), S. Wehlen (Märkel!), and Düsseldorf (Hildebrand!). It has also been taken in Austria. For the most part it is found under leaves. *C. angustatus*, Fab., is not rarely found under stones."

Var. *C. cisteloides*, Fröhl.

"*Luperus cisteloides*, Fröhl. Naturf. 28. 25. 3. t. 2. f. 50.

"*Catops castaneus*, Sturm, Ins. xiv. 9. 3. t. 273. a. A; Heer, Fn. Helv. i. 378. 2; Redt. Fn. Aust. 143. 4; Kraatz, Stett. Ent. Zeit. xii. 284. 4.

"— *cisteloides*, Kraatz, Stett. Ent. Zeit. xiii. 404; Fairm. & Laboulb. Faun. Ent. Franç. i. 299.

"Oblongus, nigro-piceus; *thorace nigro-piceo*, ante medium vix latiore, angulis posticis obtusiusculis; elytris substriatis, piceis seu castaneis.

"Long. $2\frac{1}{2}$ lin.

"*Mas*, trochanteribus posticis acuminatis seu latere inferiore dente magis minusve curvato extante.

"This is readily distinguished from the *C. angustatus*, Fab., by the darker colour and the form of the thorax. The antennæ are nearly as long as the body*, reddish brown, always darker towards the point. First joint strong, third distinctly longer than the contiguous joints, the fourth somewhat shorter than the third; fifth, sixth and seventh equal in length, eighth nearly half as long as the seventh, ninth somewhat shorter than the seventh, tenth somewhat shorter than the ninth; the last joint almost twice as long as the preceding, sharply acuminate. The head is black-brown, extremely finely and closely punctate. The thorax is formed like that of *C. angustatus*, Fab., but the sides both before and behind are nearly equally strongly rounded, so that the greatest breadth is not before the middle; the margin is by far less raised up, less broadly spread out, so that the line on each side of the thorax is both shorter and less deeply marked; *the upper side is as a rule entirely pitchy black, extremely deeply and finely (fine-shagreen) punctured*; the deep middle line is frequently wanting. The elytra are moderately arched, lightly striated, *pitchy black, more rarely pitchy brown*. The legs are ferruginous brown.

"It is spread over the whole of middle and southern Europe, and not rare. In France (according to Latreille); in Lombardy

* This is not correctly expressed. The antennæ are longer than the half of the body, but cannot be said to be "nearly as long as the body." They are in no degree longer than the antennæ of the other varieties.

(according to Villa); in Italy (according to Sturm); in Sardinia (Géné, Berlin Mus.); in Sicily (Berlin Mus.)."*

A consideration of the differences here given as characterizing these three species will not, I think, warrant us in looking upon them as more than varieties.

The differences consist in the form and colour of the thorax, the punctuation of the thorax and elytra, the form and colour of the body, the colour of the antennæ, the proportions of the joints of the antennæ, and the form of the posterior trochanters.

Of these, the difference most readily recognizable is that in the form and colour of the thorax; the form of the thorax in the *typical* specimens of *C. castaneus*, Sturm, being that shown in fig. 1, while *C. angustatus*, Fab., is that shown in fig. 2, and *C. intermedius*, Kr., somewhat between them, but nearest to fig. 2. M. Kraatz's description might lead us to suppose that fig. 3 would best represent *C. angustatus*, F., but having had under my eyes typical examples of all three, sent to me by M. Kraatz, I find that none of them have the thorax widened more in front than fig. 2, which, indeed, fairly represents the thorax of M. Kraatz's specimens of *C. angustatus*, F. But I know that there *are* examples which have their thorax widened as much in front as fig. 3. I possess one myself, and Sturm gives that form in his figure of his *C. angustatus*. We must therefore either make a fourth species to receive fig. 3, or else admit that this subgroup is variable in the form of its thorax; and there need be no hesitation in adopting the latter course, as, although I have not met with any specimen exactly filling up the gap between fig. 2 and fig. 3, I have seen all grades of transition between fig. 1 and fig. 2. Another point of difference, where we constantly see a gradual passage between the one and the other, is the colour of the thorax. In the typical *C. castaneus*, St., it is dark pitchy black throughout, and the margins are not paler than the centre, nor semitransparent. In both *C. angustatus*, F., and *C. intermedius*, Kr., the margins are paler, or semitransparent; but I have seen transition specimens where it is almost impossible to say whether the margins are paler or not, in one view looking paler, and in another quite dark and opaque. Again, specimens occur very slightly paler on the margins, and so on. The punctuation and depressions, and the spreading out and raising up of the margins of the thorax also vary. I admit that I have never seen the normal or perfect examples of *C. castaneus*, St., with the spread-out and slightly bent-up edges of the *C. angustatus*, F., or *intermedius*, Kr.; but if, as I imagine, the latter are less mature individuals, and *castaneus*, St., the more mature fully-

* Kraatz in *loc. cit.*

coloured and more solidified form, such a circumstance will sufficiently account for the differences to which I have been alluding, whether in punctuation, depression, or colour. Indeed, such a supposition accounts for more; for it is not only in the thorax that these differences exist, but also in the whole of the rest of the body. *C. castaneus*, St., is darker and more deeply punctate on the elytra also, and the deeper colour extends to the antennæ, which are slightly darker at the point; and this is only what might be expected: we always find that where a greater infusion of colour has penetrated through an individual, it is not confined to one part, but pervades the whole system. I also look upon the acuminate sutural apex of the elytra (referred to by Kraatz as being possibly a sexual distinction of *C. angustatus*, F.) as another indication of immaturity. I have never seen this in *C. castaneus*, St., but I have found it indifferently both in the males and females of *C. angustatus*, F. As to the differences in the form of the joints of the antennæ of *C. angustatus*, F., and *castaneus*, St., these are too slight, even adopting absolutely M. Kraatz's own description, to allow us to use them as characters for a species; but I cannot entirely adopt his descriptions without reservation, as, notwithstanding a very careful examination of the specimens he sent me, I have scarcely been able to detect the differences he alludes to. Turning back to his description, it will be seen that the only differences given are the following:—In *C. angustatus*, F., he says, the third joint is nearly twice as long as either the second or fourth. In *C. castaneus*, he says, the third is distinctly longer than either the second or fourth. In *angustatus* the seventh and ninth are said to be equal in length. In *castaneus* the ninth is somewhat shorter than the seventh. In *angustatus* the last joint is said to be “longer than the preceding, long cylindric and acuminate.” In *castaneus* it is “almost twice as long as the preceding, sharply acuminate.” The differences here given are thus exceedingly minute, so much so as to be inappreciable by an ordinary observer. Now I know that in undisputed species in this genus considerable differences are to be perceived in different individuals in the relative thickness, &c. of the joints of the antennæ; so much so as to make the antennæ appear decidedly more clubbed in the one than the other. This minute measuring of the joints appears to me therefore an unsafe character, not to be adopted. There only remains the difference in the form of the posterior trochanters in *C. angustatus*, F., and *castaneus*, St. On this I shall only observe, that M. Kraatz admits that there is great variation in the development of these parts, but seems to think there is an impossibility in a transition taking place between a trochanter having a projecting curved tooth at the

inner side, and a trochanter itself of a gouge-chisel-shaped form without a tooth on the inner side. My readers must judge for themselves as to this; but I agree with Erichson in thinking that the development of that part is variable, and I cannot agree with M. Kraatz in putting bounds to the variation.

The differences we have been considering are almost entirely those between *C. angustatus*, Fab., and *intermedius*, Kr., on the one part, and *C. castaneus*, St., on the other. It is much more difficult to point out those between *C. angustatus*, F., and *intermedius*, Kr.: as to these, I shall confine myself to referring the reader to the distinctions pointed out by M. Kraatz himself in his description of *C. intermedius* above quoted, merely observing that if I am right in joining together the much more dissimilar forms of *C. angustatus*, F., and *castaneus*, St., we can have no hesitation in refusing to make another species on the strength of the almost imperceptible differences relied on by M. Kraatz, a decision which a careful examination of the specimens of *intermedius* so kindly furnished to me by that gentleman has given me no reason to alter. If any of the varieties are to be exalted into separate species, *castaneus*, St., is obviously the one best entitled to this.

Referring back then to my general comprehensive description of this species above given (p. 13), I have only to add, that the extreme examples of the foregoing varieties may be known without much difficulty by the following characters. The less decided examples form intermediate steps, and it will often be found scarcely possible to say to which of the nearest varieties they belong.

1. *Pale ferruginous varieties.*

Var. A. Thorax widest at front, as shown in fig. 3; margins paler than centre.

Var. B. *C. angustatus*, Kraatz. Thorax widest not at the very front, but a little before the middle, as in fig. 2; margins paler than centre; depressions on thorax not deep. Elytra nearly parallel, darker at suture towards apex.

Var. C. *C. intermedius*, Kraatz. Thorax a little broader than in var. B; margins paler than centre, with deeper depressions on thorax. Elytra slightly widened in middle, entirely red ferruginous.

2. *Dark chestnut variety.*

Var. D. *C. castaneus*, Sturm. Thorax widest in middle, as shown in fig. 1, of a more solid consistence than the pale varieties; margins not paler than centre.

This species is found over the whole of Europe, and Gebler

mentions it as having been taken in the south-west of Siberia. The whole of the above varieties are found in England and Scotland, but var. D is the commonest and var. A the rarest—(of it I have only seen one example).

2. *C. spadiceus*, Sturm.

Catops spadiceus, Dahl. *in lit.*; Sturm, *Ins.* xiv. 11. taf. 273. fig. 6 B; Redt. *Fn. Aust.* 771; Kraatz, *Stett. Ent. Zeit.* xiii. 399.

Oblongus, nigro-piceus; *thorace fortius punctato*, postice angustiore, ante medium latiore, angulis posticis obtusis; elytris castaneis, parum ventricatis, apice obscurioribus, substriatis; antennis ferrugineis, apicem versus obscurioribus. Long. $2\frac{1}{4}$ – $2\frac{1}{2}$ lin.

Mas, trochanteribus posticis scalpiformibus.

Fig. 4.



The most robust species in this group. Head, thorax and under-side in the fully-coloured individuals pitchy black, the elytra fine chestnut-brown. The examples not fully coloured are dirty yellowish brown. The antennæ are tolerably long, scarcely half as long as the body, reddish brown, in the normal state *the last five joints darker*; the first somewhat stronger, third somewhat longer than the adjoining joints; second, fourth and fifth of equal length; sixth somewhat shorter than the fifth, and as long as the seventh and ninth; eighth somewhat shorter than the tenth; tenth somewhat shorter than the ninth; *the last joint is somewhat shorter than the foregoing*, strongly acuminate. The head is pitchy black, the parts of the mouth ferruginous red; the top of the head finely and sparingly, the front more deeply and strongly punctured. The thorax is distinctly narrower than the elytra, a little arched, somewhat broader than long; the sides rounded, and somewhat more so in front than behind, so that the greatest breadth of the thorax is rather before the middle; the posterior angles are obtuse and rounded off, the basal margin straight-truncate; the margin in the posterior half is broadly expanded and a little bent up, so that a somewhat bent and deep line arises on each side, particularly when seen from above. *The upper side is strongly and deeply punctate**, moderately densely covered with a golden-yellow pubescence, with a distinctly impressed line along the middle, about one-third of

* Sturm says, "finely and densely" punctate, but Kraatz properly corrects this; the deep coarse punctuation being one of the most characteristic features of the species.

the thorax in length. The scutellum is triangular, punctate, brown. The elytra are *moderately arched*, chestnut-brown, and a little darker towards the apex; immediately behind the shoulders and a little further back somewhat *bellied out*, but not so that the greatest breadth lies before the middle. The striæ are moderately shallow, but very distinct, and their punctuation is proportionately strong and somewhat wrinkled. *The pubescence on the elytra is long, and not so close or adpressed as in the allied species.* The legs are ferruginous brown.

Kraatz records the male as having chisel-formed posterior trochanters, but in strongly developed specimens there might easily occur gouge-formed trochanters. Sturm only knew the female. I have also only seen the female.

This species is to be distinguished from the preceding by its more robust form, deeper punctuation, more bellied elytra, and by the longer pubescence on the elytra. For a considerable time I was disposed to look upon it as merely another variety of *C. angustatus*, F., but I am now satisfied that it may justly take its place as a distinct species. The stronger punctuation taken by itself might only indicate a variety, but the bellied form of the elytra and the difference in the pubescence are more essential characters; the latter is particularly well seen on the edges of the elytra.

It was first recorded by Sturm as having been found in Austria and Hungary. Chaudoir found it at Kiew. Kraatz records it as having been taken at Halle, Bautzen, Erlangen, Darmstadt, &c. It has been taken by M. Chevrolat in France, and I have one specimen taken in Scotland. Kraatz says, it is generally found under leaves.

3. *C. humeralis*, Brullé.

Choleva humeralis, Br. Exped. Sc. de Morée, iii. p. 162. no. 255.

“Nigricans, punctatus, rufo-villosus; ore, antennis, elytrorum macula humerali, abdominis segmentorum marginibus pedibusque ferrugineis; antennis apice fuscis; clytris profunde punctato-striatis.

“Long. $2\frac{1}{2}$ lin., lat. $1\frac{1}{4}$.

“Head black, finely punctate, with the whole of the mouth and the half of the antennæ ferruginous; the latter slightly pubescent, their five last articles brown. Thorax a little less long than broad, rounded on the sides, raised at the posterior angles, truncate behind, finely punctate, of a blackish brown, lighter on the lateral margins, and covered with a short reddish pubescence. Scutellum triangular, blackish and pubescent like

the thorax. Elytra oval, a little broader than the thorax, marked with deep longitudinal striæ formed by large deep punctures, and tolerably strongly punctate in the intervals between the striæ; their colour is of a deep brown, marked with a large ferruginous blotch at each of the anterior angles; they are covered by a reddish adpressed and tolerably dense pubescence. Under side of the body finely punctate, blackish, with the edges of the abdominal segments ferruginous. Legs of this latter colour; posterior thighs partly brown.

“Upon flowers in the month of June. Arcadia*.”

This appears to be the proper place to take in this species. I have not seen it. Brullé did not give a figure of it in his work, and on inquiry at Paris I find that his specimens must have been eaten by the larvæ of the *Anthreni* so destructive to collections on the continent. The only trace or record of the species, therefore, so far as I know, is his description, of which the above is a translation, and which seems to me to show considerable affinity to the preceding species (*spadiceus*, St.).

4. *C. agilis*, Illig.

Ptomaphagus agilis, Illig. Käf. Pr. 882.

Choleva agilis, Spence, Linn. Trans. xi. 1402.

Catops fuscus, Gyll. Ins. Suec. i. 281. 5.

Choleva testacea, Latr. Gen. Crust. et Ins. xi. 28. 2.

Catops agilis, Erich. Käf. d. Mark Brand. i. 234. 2; Sturm, Ins. xiv. 7.

2. tab. 272. n. N; Heer, Fn. Helv. i. 379. 3; Redt. Fn. Aust. 133. 3;

Kraatz, Stett. Ent. Zeit. xiii. 405; Fairm. & Laboulb. Fn. Ent. Franc. i. 300.

Oblongo-ovatus; nigro-piceus, vel testaceo-piceus; thorace transverso, postice latiore; elytris substriatis, antennis pedibusque ferrugineis.

Long. $2\frac{1}{4}$ lin.

Mas, tibiis mediis curvatis; trochanteribus posticis inferiore dente curvato acuminato armatis.

Fig. 5.



Shorter and somewhat broader than *C. angustatus*, Fab., not very constant in colour, the darkest examples ferruginous brown with lighter antennæ. The antennæ are scarcely half so long as the body; the third joint almost twice as long as the second; the fourth, fifth and sixth are nearly equally long, the remainder (seven to eleven) are somewhat stronger than the preceding; the eighth is half as long as the ninth; the ninth equal to the tenth; the last joint is a half longer than the preceding joint, obtusely acuminate. The head is brown, extremely fine and tolerably sparingly punctured. The thorax is almost twice as

* Brullé in *loc. cit.*

broad as long, nearly of the breadth of the elytra, *narrower in front than behind, the broadest part being decidedly behind the middle*; the posterior angles are obtuse and rounded, and *the sides are neither spread out nor bent up, so that the moderately dense and very finely punctate upper side is entirely smooth*. The colour of the thorax is dark ferruginous brown, darker in the middle. Individuals with the thorax entirely blackish occur rarely. The elytra are generally ferruginous or testaceous, sometimes chestnut and sometimes pitchy brown; they are finely and densely punctate; at the base very feebly, towards the apex more distinctly finely punctate striate. The legs are ferruginous brown, *the middle tibiæ of the males are bent strongly inwards*, the posterior trochanters are not distant at the base, and are armed on the inner side with a short strong pointed tooth.

This species is readily distinguished by the form of the thorax, narrowest in front and widest behind. The other particulars which I have printed in *italics* are characters also easily seized.

It is spread over the most part of Europe, in Prussia, Austria, Saxony, Switzerland, France, Sweden, and Britain, but is everywhere scarce.

The only exotic species belonging to this group which I know of is *C. lateritius*, Menet. *C. Frankenhaueseri*, Mann., would also fall into this group, if it is retained in the genus at all, but its pectinate antennæ seem to me to require us to create a separate genus to receive it.

C. lateritius, Men.

Catops lateritius, Menetries, Mem. Acad. Imp. Sciences, St. Petersburg, 6 sér. vi. (1849), p. 52.

“Oblongo-ovatus, pallide rufo-ferrugineus, breviter griseo-pubes-cens; antennis tenuibus longitudine dimidii corporis; thorace transverso subdepresso postice latiore angulis obtusis, lateribus subreflexis; elytris creberrime punctulatis, substriatis, stria suturali profunde exarata.

“Long. 2 lin., lat. $\frac{3}{4}$ lin.

“Near *C. agilis*, Illig., but proportionately narrower, the thorax is much less broad and flatter, and the antennæ are much longer.

“Described from two individuals taken at Novaia Alexandrovskaia*.”

[To be continued.]

* Menetries in *loc. cit.*